JALMENUS NOTOCRUCIFER SP. N. (LEPIDOPTERA: LYCAENIDAE) FROM SOUTH WESTERN AUSTRALIA

S.J. JOHNSON[1], R.W. HAY[2] and H.H. BOLLAM[3]
[1] *Oonoonba Veterinary Laboratory, P.O. Box 1085, Townsville, Qld, 4810*
[2] *8 Klem Avenue, Manning, W.A., 6152*
[3] *135 The Esplanade, Mt Pleasant, W.A., 6153*

Abstract

Jalmenus notocrucifer sp. n. (Lepidoptera: Lycaenidae) is described from inland southern Western Australia. A leguminous foodplant, *Daviesia benthamii* Meissner (Fabaceae) is recorded for the first time for a species of *Jalmenus*. The larvae are attended by an unidentified *Iridomyrmex* sp. (Hymenoptera: Formicidae).

Introduction

Recent collecting (Graham and Moulds 1988) in the arid areas of south Western Australia has recovered the widespread *Jalmenus icilius* Hewitson as well as an additional species, *J. aridus* Graham and Moulds. During several trips to the area near Southern Cross (31°14'S 119°31'E), the authors discovered an undescribed species of *Jalmenus* closely allied to *J. aridus*. The absence of tails, differences in genitalia, a different host plant and species of attendant ant indicate that it is a distinct species. Nomenclature for male genitalia follows that of Eliot (1973), and female genitalia that of Klots (1970). Voucher specimens of the ants attending the intermediate stages of *J. notocrucifer* sp.n. have been lodged in the Australian National Insect Collection, Canberra (ANIC). Abbreviations for collectors names are as follows: CGM - C.G. Miller, HHB - H.H. Bollam, PSV - P.S. Valentine, RWH - R.W. Hay.

Jalmenus notocrucifer sp. n.

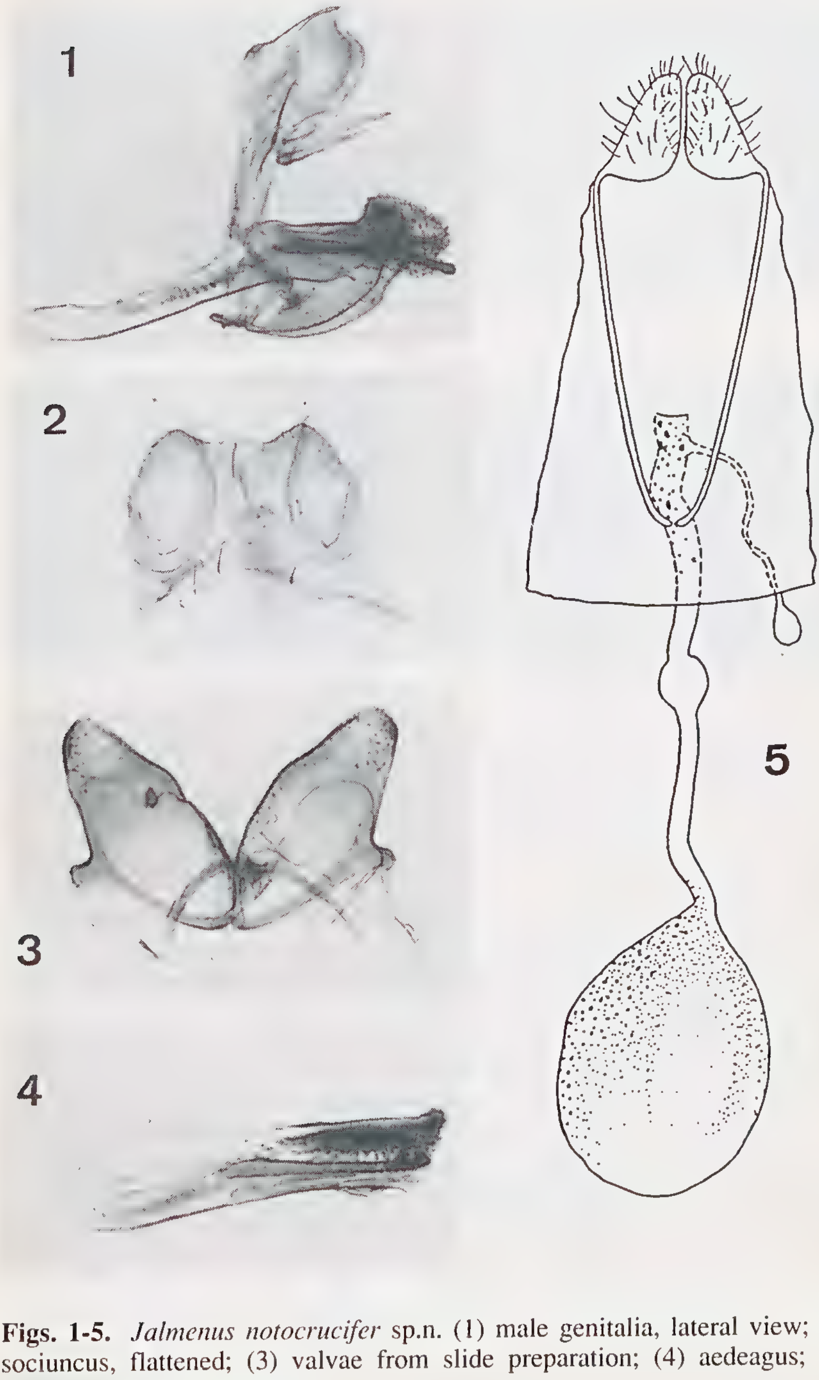
Types. Western Australia: *Holotype* ♂, Yellowdine, 12.xii.1986, R.W. Hay, (registered type No: 2490) genitalia slide 3170. Allotype ♀ with same label data, both in ANIC.

Paratypes: 1♀, 15.xii.1986, Yellowdine, RWH (ANIC). 1♀, 10.xi.1987, 1♂, 3♀♀, 11.xi.1988, 3♂♂, 13.xi.1988, all Yellowdine, HHB (HHB collection, Perth). 2♂♂, 12.xii.1986, 2♂♂, 2♀♀, 10.xi.1987, all Yellowdine, RWH (S.S. Brown collection, Wollongong). 4♂♂, 27.x.1987, Yellowdine, HHB (J. d'Apice collection, Sydney). 1♂, 1♀, 15.xii.1986, 3♀♀, 1.xi.1987, all Yellowdine, HHB (K. Dunn collection, Melbourne). 2♂♂, 15.xii.1986, 1♀, 10.xi.1987, all Yellowdine, HHB (R. Eastwood collection, Nambour). 3♂♂, 1♀, 12.xii.1986, 1♂, 3♀♀, 10.xi.1987, 1♂, 1♀, 11.xi.1987, 3♀♀, 11.xi.1988, all Yellowdine, RWH, 1♂, 1.xi.1987, 5♂♂, 2♀♀, 11.xi.1988, all Southern Cross, RWH (RWH collection, Perth). 3♂♂, 10.xi.1987, all Yellowdine, RWH (D.R. Holmes collection, Melbourne). 1♀, 10.xi.1987, 1♂, 11.xi.1987, 1♂, emerg. 6.xi.1989, 1♀, emerg. 7.xi.1989 all Yellowdine, RWH, 2♀♀, 10.xi.1987, Southern Cross, RWH, 4♂♂, 2♀♀, 12.xi.1988, Yellowdine, PSV (S.J. Johnson collection, Townsville). 1♂, 12.xii.1986, 4♂♂, 1♀, 10.xi. 1987, 1♀, 13.xi.1987, all Yellowdine, RWH (J.F.R. Kerr collection, Brisbane). 2♂♂, 10.xi.1987, 1♂, 10.xi.1988, Yellowdine, HHB (R. Manskie collection, Maryborough). 1♂, 1♀, 15.xii.1986, 5♂♂, 10.xi.1987, all Yellowdine, HHB (R. Mayo collection, Newcastle). 5♂♂, 2♀♀, 27.x.1987, 2♀♀, emerg. 30.x.1987, 1♂, 1♀, emerg. 31.x.1987, 2♂♂, 3♀♀, emerg. 2.xi.1987, 1♀, emerg. 3.xi.1987, 1♂, 1♀, emerg. 5.xi.1987, 1♀, emerg. 6.xi.1987, all Yellowdine, CGM (CGM collection, Lismore). 1♂, 11.xi.1988, Yellowdine, HHB (F. Sattler collection, Sydney). 19♂♂, 4♀♀, 11.xi.1988, 1♀, emerg. 12.xi.1988, all Yellowdine, PSV (PSV collection, Townsville). 1♂, 1♀, 10.xi.1987, Yellowdine, 4♂♂, 1♀, 11.xi.1988, Southern Cross, RWH (G. Wood collection, Atherton).

Description

Holotype male (Figs. 6, 7).

Head: dark grey, frons narrowly edged white, more broadly at frontoclypeus; gena white, extending to occipital region as prominent white stripe posterior to eyes; vertex white, chaetosemata black, small tuft of white hairs in midline between antennae. Labial palps brown, basal segment white dorsally and laterally, small patch of grey scales laterally. Eyes smooth. Antennae: scape edged white, flagellum weakly ringed white, clubs faintly orange. *Thorax*: grey, dorsal hairs brownish, ventral hairs and scales white. Legs: femora white, tibiae pale brown, tarsi dark brown suffused with white apically. Fore wing below: pale brown, termen darker, prominent curved post median band composed of series of circular to oval dark brown spots edged white; band displaced slightly at M_3 and CuA_2; spots between CuA_2 and 1A+2A sometimes reduced. 3 dark brown bars edged white in cell, indistinct brown spot below cell, white streak along inner margin; serrated dark brown subterminal band edged white, points of serrations extend along veins to termen. Forewing length 13.0-15.9 mm (mean 14.8, n = 18). Hindwing above: brown, inner margin and anal lobe whitish, central metallic blue area extending from base to postmedian band and from M_1 to 1A+2A; long hairs over metallic area and along inner margin to tornus; variable brown bar at end of cell; prominent dark brown spot between CuA_1 and CuA_2; small dark brown tornal spot edged white distally; indistinct dark brown postmedian band between M_1 and 1A+2A, edged with scattered white scales below CuA_2; white scales often lost in worn specimens; indistinct white line on outer edge of subterminal band between CuA_1 and 1A+2A; cilia white. Hindwing below: colour similar to underside forewing, white stripe along base of costa; 3 dark brown spots edged white in cell; series of dark brown spots forming a curved postmedian band from $Sc+R_1$ to 3A, spot between Rs and M_1 occasionally elongated, spots between M_1 and M_3 displaced distally, spot between CuA_1 and 1A+2A strongly recurved with band broken at CuA_2. Additional spots at base between $Sc+R_1$ and Rs and CuA_2 and 1A+2A and aligned longitudinally with inner cell spot; medial spots below CuA_1 and CuA_2, small spot on anal margin below 3A; serrated subterminal band edged white medially and enclosing several white edged, dark brown hemispherical terminal spots; tornal spot and spot between CuA_1 and CuA_2 darker chocolate brown; cilia



Figs. 1-5. *Jalmenus notocrucifer* sp.n. (1) male genitalia, lateral view; (2) sociuncus, flattened; (3) valvae from slide preparation; (4) aedeagus; (5) female genitalia, ventral view.

white, tufts of long brown cilia at end of CuA_2 and tornus. *Abdomen*: dorsally brown, laterally and ventrally white. Fore wing above: brown, basal costa greyish, metallic blue area extending from base to postmedian band and from inner margin to middle of cell; scattered hairs at base and along inner margin; faint dark brown bar at end of cell; cilia white. Genitalia (Figs. 1-4). Vinculum and tegumen ring oval, slender; saccus small rounded. Uncus undeveloped, socii broad, curved, widely spaced, bearing numerous setae; brachia of gnathos stout basally, evenly curved, tapered and heavily sclerotised distally with tips curved inwards. Valvae broad basally tapering to a blunt, slightly beaked apex bearing numerous long setae. Aedeagus; coecum broad, rounded, ductus entering dorsally; distally more heavily sclerotised with prominent Chapmans process; vesica arising dorsoapically and bearing numerous conical cornuti; ductus ejaculatorius a heavily sclerotised tube armed with numerous posteriorly directed spines. Juxta large, V-shaped.

Female (Figs. 8, 9).

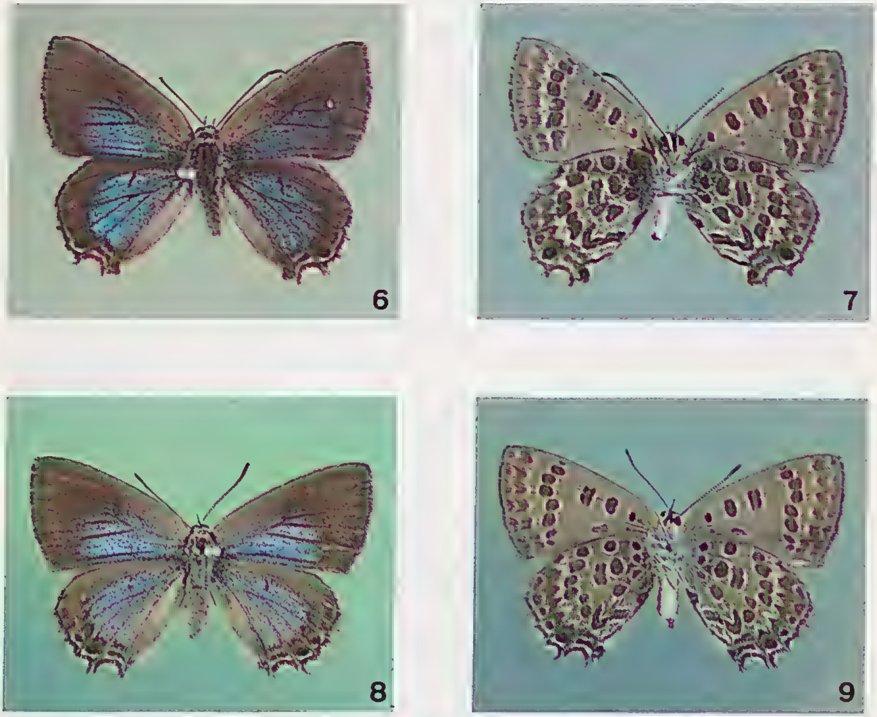
Wing with upperside similar to male but metallic areas purplish blue, bar at end of hind wing cell more prominent in some specimens; white edging of subterminal band extending from M_3 to tornus. Forewing length 16.0-18.0 mm (mean 16.9, n = 8). Underside: Similar to male but subterminal band more prominent and fore wing with small indistinct spot towards base below cubitus. Genitalia (Fig. 5). Bursa copulatrix with numerous circular sclerotised patches. Ductus seminalis arising close to ostium bursae. Corpus bursae simple, bearing numerous signa. Apophyses posteriores long with spatulate ends.

Pupa: pale cream brown, covered in dark brown blotches and spots which coalesce to form irregular patches on dorsum of abdominal segments. Length 11.0 mm, width 4.0 mm.

Distribution. The species is known from two sites, at Yellowdine, 31°19'S 19°36'E and near Southern Cross 31°14'S 119°31'E.

Discussion

The prominent chocolate brown underside markings distinguish *J. notocrucifer* from all other species in the genus except *J. aridus*. It can be separated from that species by the lack of a hindwing tail, narrower valva in the male, different host plant and species of attendant ant. Both species occur in the arid areas of southern Western Australia, with the only known colony of *J. aridus* (see Graham and Moulds 1988) being approximately 200 km east of the nearest colony of *J. notocrucifer*. An examination of the distributions of the respective host plants and attendant ants suggests that both species are likely to be more widespread and may be sympatric. Further collecting will be needed to establish the distribution of both butterflies in Western Australia. Graham and Moulds (1988) listed *Acacia tetragonophylla* F. Muell. as the host plant and *Froggattella kirbyi* (Lowne) as the attendant ant of *J. aridus* but they provided no information on the distribution of either. *A.*



Figs. 6-9. *Jalmenus notocrucifer* sp.n. (6,7) male holotype (6) upperside; (7) underside; (8) upperside female; (9) underside female.

tetragonophylla is widespread throughout arid areas of Western Australia and central Australia (S. Patrick, *pers. comm.*). In Western Australia *F. kirbyi* is locally common in the southern wheat belt (J. Majer, *pers. comm.*).

The host plant of *J. notocrucifer* occurs widely in southern Australia as 2 subspecies, *Daviesia benthamii benthamii* and *D. b. humilis* Crisp. In Western Australia *D. b. benthamii* occurs from near Geraldton in the north to Albany and Esperance on the southern coast (Crisp 1980) and eastwards beyond Kalgoorlie onto the Nullarbor Plain (M.D. Crisp, *pers. comm.*). Both subspecies occur in South Australia and *D. b. humilis* extends into Victoria and western New South Wales (Crisp 1982).

The distribution of the attendant ant *Iridomyrmex* sp. is not known; however, the ant appears identical to *Iridomyrmex* sp. JDM SGI which was collected widely during the Western Australian Museum's Eastern Goldfields Biological Survey (J. Majer, *pers. comm.*).

The species has only been taken in sclerophyll woodland growing in areas with an annual rainfall between 230 and 300 mm. Adults of both sexes fly in close proximity to the host plant with aggregations of males around plants with pupae close to eclosion. Pupation occurs in the entrance to the ants nest at the base of the host plant. Larvae have been observed on foliage and flower buds of the host plant but none were collected for description.

The seasonality of *J. notocrucifer* is not fully understood. Adults, larvae and pupae have been encountered from October to December but a brief visit to both sites in February 1990 failed to uncover adults or intermediate stages. No visits have been made in other months. The absence of adults, larvae and pupae in summer suggests an egg diapause broken by winter rainfall. Until further collecting is undertaken in other months the seasonality and voltinism of the species remains unknown.

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